7-2: Addition Counting Principles

Warm-up: How many positive integers less than or equal to 1000 satisfy each condition?
1. Divisible by 5? 2. Divisible by 7? 3. Divisible by 5 or 7?

Union:

Disjoint/Mutually Exclusive:

Intersection:

Addition Counting Principle (Mutually Exclusive Form):

Theorem (Probability of the Union of Mutually Exclusive Events)

Example 1: a. If two fair dice are tossed, what is the probability that the sum is 2 or 3?

b. If two dice are tossed, what it the probability that the sum will be even or greater than 4?

Addition Counting Principle (General Form):

Theorem (Probability of a Union of Events General Form):

Example 2: Thirteen of the 50 states include territory that lies west of the continental divide. Forty-two states include territory that lies east of the continental divide. Is this possible? Explain.

Example 3: Three fair coins are tossed. What is the probability that *not all* of the coins show the same face?

Complementary Events:

Example 4: Two dice are tossed. Find the probability that their sum is not 6.

Theorem (Probability of Complements):

Homework:

"Opportunity is missed by most people because it is dressed in overalls and looks like work." – Thomas A. Edison